

STATUS OF CLAIMS AND SUPPORT FOR CLAIM CHANGES:

The status of the claims is as follows:

Claims 1-19 (Pending).

Claims 20-22 (Canceled).

Claim 23 (Pending).

Claim 24 (Canceled).

Claims 25 and 26 (Pending).

Claims 27-51 (Canceled).

Claim 52 (Pending)

Claim 23 has been amended to recite a burner for creating a flame exposed to the interior of the cyclonic flow path. Support is found in column 3, lines 45-46 of U.S. Patent No. 5,975,892 where the following is disclosed:

“The burner 36 is mounted vertically in the calcining pipe to create an upward flame within the cyclonic feed region.”

Furthermore, a new claim 52 has been added and specifies that the burner is mounted vertically and is designed to create an upward flame. Support is again found in the above-quoted language from column 3, lines 45-46 of U.S. Patent No. 5,975,892.

REMARKS

The independent claim 23 has been amended in accordance with the guidelines for reissue applications as set forth in 37 CFR 1.173(2). Claim 24, which depended from claim 23, has been canceled. Moreover, a new claim 52 depending from claim 23 has been added.

Claim 23 now specifies a substantially vertical calcination reactor, means for effecting transport of particulate material through the reactor along a substantially cyclonic flow path, and a burner mounted in a bottom portion of the reactor. The burner is arranged to create a flame exposed to the interior of the cyclonic flow path.

The Examiner rejects claims 23 and 24 under 35 USC 102(b) as being anticipated by U.S. Patent No. 4,025,295 to Touborg. The Examiner states that Touborg discloses a substantially vertical calcination reactor 3, means 4,6 for effecting transport of the particulate feed material through the reactor 3 along a substantially cyclonic flow path and means 7 for creating a heat source within the flow path.

To begin with, the applicant respectfully points out that the calcination plant of Touborg is designed to generate eddys rather than a cyclonic flow path. Please see column 3, lines 16-22 of the reference where the following is disclosed:

"The feeding of the preheated raw material and the fuel into the calcination chamber is arranged in a manner such that eddys are formed between the central gas stream and the calcination chamber wall wherein the combustible gas burns and the individual particles of raw material are calcined substantially isothermally."

The difference between a cyclonic flow path and eddys is that the bulk of the material in a cyclonic flow path travels along a spiral while the bulk of the material in eddys does not. The movement of the bulk of the material in eddys is outlined in column 4, lines 7-12 of Touborg where the following is disclosed:

“The gas stream promotes the formation of the eddys by entraining the fuel/gas/particle suspension as it comes in contact with the sides of the gas stream, the suspension being carried a relatively short distance up the chamber and then falling outwards and downwards before being entrained again.”

The applicant additionally points out that, in contrast to claim 23, Touborg lacks a burner in the bottom portion of the calcination reactor 3. Touborg admits oxygen and fuel into the bottom of the calcination reactor 3 separately, and the oxygen and fuel mix and combust after entering the reactor 3.

In light of the foregoing, the applicant respectfully submits that claim 23 and its dependent claim 52 are not anticipated by Touborg.

Claims 23 and 24 are further rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 3,584,848 to Kiyonaga. The Examiner states that Kiyonaga discloses a substantially vertical calcination reactor 38, means 30,32 for effecting transport of particulate material through the reactor 38 and means 26 for creating a heat source within the cyclonic flow path.

The applicant first notes that the element 38 of Kiyonaga is not a calcination reactor but a clinker reactor which receives material that has already been calcined. Please see column 3, lines 13-17 of the reference. Moreover, it does not appear that the clinker reactor 38 of Kiyonaga is

provided with a burner as is the calcination reactor of claim 23. Rather, a conduit extends into the clinker reactor 38 and supplies fuel and oxygen which combust in the reactor 38.

While Kiyonaga does teach a calcination reactor 14, particulate material in the reactor 14 does travel along a cyclonic flow path as in claim 23. In addition, contrary to claim 23, the calcination reactor 14 of the reference lacks a burner. Instead, fuel and oxygen are fed into the calcination reactor 14 via a conduit 16, and the fuel and oxygen then burn inside the reactor 14.

In view of the above, it is the applicant's opinion that claim 23 and its dependent claim 52 are not anticipated by Kiyonaga.

Pursuant to the preceding discussion, it is respectfully requested that the rejections of claims 23 and 24 under 35 USC 102(b) be withdrawn.

Please charge any costs associated with this response to our Deposit Account No. 17-0055.

Respectfully submitted,



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